Chartered Building Consultancy

Acoustic South East

Planning Application - New Build Residential Development

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Date: 22/10/2025

Project: J4003

Issue 2

Site: **Broadbridge Heath**

Client: **Vistry Homes**

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Issue 1	22/04/2025	Original Issue
Issue 2	22/10/2025	Revised Assessment to account for uplift in housing numbers from 89 dwellings to 92 dwellings

1 Introduction and Executive Summary

Acoustic South East have been appointed to undertake an acoustic assessment to support a planning application for residential units at land between Sargent Way, Broadbridge Way and Old Wickhurst Lane

Standards and guidance referenced for this assessment include:

- BS8233 (Sound insulation and noise reduction for buildings) 2014
- National Planning Policy Framework (NPPF), 2024
- Acoustics Ventilation and Overheating Guidance (AVOG), January 2020
- Building Regulations Approved Document O – Overheating
- Association of Noise Consultants (ANC) ADO Guidance, November 2024
- ProPG2017 - Professional Practice Guidance on Planning & Noise

Three class 1 sound level meters were used to characterise the site soundscape between 10-15th April 2025. These were located at Sargent Way to the West of the application site, Broadbridge Way to the North of the site and Old Wickhurst Lane to the East of the site. The location of the survey was designed to consider the relevant road traffic sound sources, as well as the Tesco car wash, as all of these had been previously flagged for attention by Horsham District Council in their pre-application advice with the client.

Distant road traffic noise is heard from the A24 to the East of the site. The survey data identified that Broadbridge Way is the noisiest sound source to the North of the site. Subjectively, Tesco drive through car wash could also be detected at the far Eastern boundary of the site.

Contextually, housing already exists to the West, South and North of the application site.

The worst-case Sound Reduction Index (SRI) is for Plot 19 and is driven by L_{Amax} events for the overnight period. Plot 19 is located approximately 13m immediately South of Broadbridge Way.

Rigorous calculations of the worst-case plots identified that only Plot 19 required enhanced glazing for the bedroom spaces. The remainder of the site is capable of being constructed using standard thermal double glazing ($R_{traffic}$ 25dB(A))

All garden spaces/external amenity areas have been assessed and are all below 55dB $L_{Aeq,\ 16\ hour}$ achieving the requirements of BS8233:2014 and the World Health Organisation Guidelines for Community Noise dated 1999, revised 2018.

A ProPG2017 initial site risk assessment to inform stakeholders and decision makers alike indicates that the site is a low to medium risk in respect of mitigation measures required to protect future occupants.

Planning permission should not be withheld on noise grounds

2 Caveat

The findings and outcomes contained within the report are based on the plans and assumptions provided to us by the client. It is critical that the report is read in its entirety to ensure that the information provided and the calculations thereafter remain correct and may be relied upon.

3 Context, Noise Criteria & Noise Assessment Methodology

3.1 Context

The report provides an account of the site soundscape for the proposed detailed planning application being made to Horsham District Council.

The scheme proposes 92 new build units. These are comprised of flats, semi-detached and detached dwellings and flats over garages (FOGs).

The site is bordered by Sargent Way to the West, Broadbridge Way to the North and Old Wickhurst Lane to the East. To the immediate East of Old Wickhurst Lane is a Tesco superstore and located close to the boundary is a fixed drive through car wash.

At the top of Sargent Way to the North West of the site is a mixed-use development with flats above a Co-op store.

Old Wickhurst Lane is a narrow lane without any markings and intended more for a cycle path/pedestrian access to more recently introduced residential estate to the South.

The busier and noisier A24 is located approximately 300m East of Old Wickhurst Lane.

Established residential estates already exist to the West and South of the application boundary.

3.2 Site Location

The application site is bordered in red in Figure 1 below.

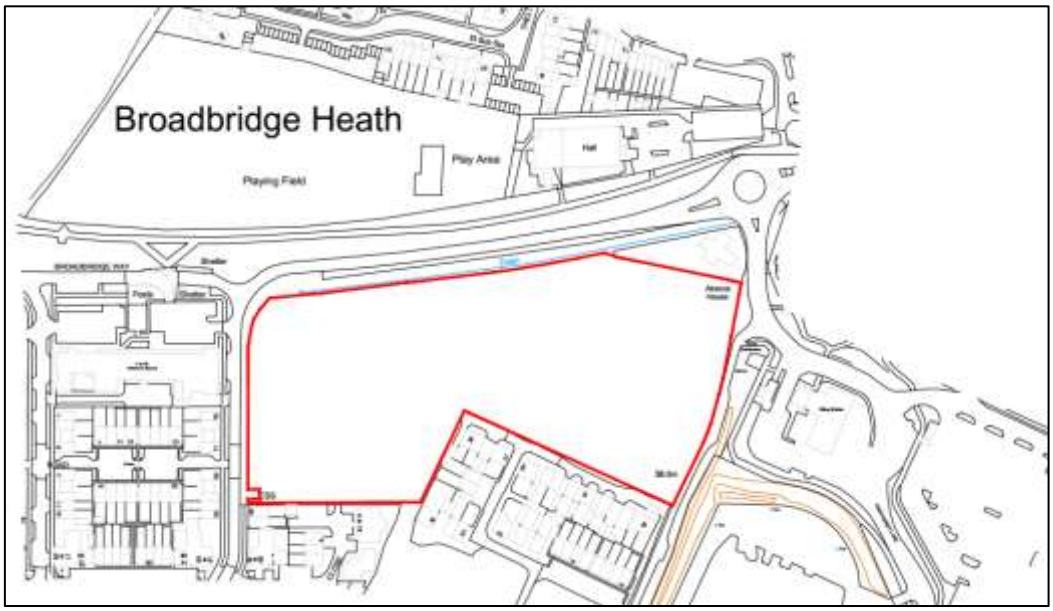

Figure 1. Site Location

3.3 Proposed Layout

The proposed layout is shown in Figure 2 below. The revised layout, for 92 dwellings sees 3 units added on the Northern boundary, albeit still separated and buffered from the road traffic noise with a service/access road for the development.

Figure 2. Proposed Site Layout

3.4 Soundscape

3.4.1 Sargent Way

At Sargent Way, occasional passing vehicles could be heard, along with distant children playing. The dominant sound was that of distant road traffic to the East, presumably the A24. Occasional plant noise was noted from a rear louvred plant room to the Co-op store, albeit it was only noticeable without any passing traffic and was not continuous.

3.4.2 Broadbridge Way

At Broadbridge Way to the Northern boundary of the site, children playing in a dedicated public play area could be heard, as well as passing vehicles and more distant continuous road traffic to the East of the site. Birdsong was also noted.

3.4.3 Old Wickhurst Lane

At Old Wickhurst Lane to the East of the site, during the visit made, sounds were noticeable from the Tesco car wash area including water jets and driers. Upon visiting the site, it was noted that a drive through car wash was in fact operating and that a number of cars were queuing to use the car wash. A typical cycle for the drive through car wash was observed as 6 minutes and having spoken to Tesco who run and manage the drive through car wash, it was reported as being operational from 06:00 to 21:00 hours Monday through to Saturday and 07:00-19:00 hours on Sundays.

A waves hand car wash was also noted as present within the Tesco car park and their advertised hours of operation are 08:30 to 18:00 hours Monday to Saturday and 08:00 to 16:00 hours on Sundays.

3.5 Pre-Application Advice

The client sought pre-application advice from Horsham District Council. This was dated 17th December 2024 from Stephanie Bryant, Senior Planning Officer. It stated that a noise impact assessment was necessary to consider the Tesco filling station and car wash to the East, and Broadbridge Way (North) and Sargent Way to the West of the site.

3.6 Planning Policy and Assessment Criteria

3.6.1 National Planning Policy Framework Dec 2024

The National Planning Policy Framework (Dec 2024) defines the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so.

The following paragraphs are relevant within NPPF Section 15 (Conserving and enhancing the natural environment) states the following:

Paragraph 187(e) - Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability, and

Paragraph 198 - Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

Paragraph 200– Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

3.6.2 BS8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings

Table 4 of BS8233:2014 provides the following guideline values:

Activity	Location	Time period of day	
		07:00-23:00	23:00-07:00
Resting	Living Rooms	35dB $L_{Aeq,16hour}$	-
Dining	Dining Room/Area	40dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedroom	35dB $L_{Aeq,16hour}$	30dB $L_{Aeq,8hour}$

Table 1. BS8233:2014 Criteria

It is relevant to note that Table 4 criteria in BS8233:2014 relates to continuous and anonymous sound. It is relevant to note that whilst continuous and anonymous sounds will apply to LT1 and LT2, the soundscape generated by the Tesco car wash is likely to have attention drawing qualities and will be considered as a worst-case hour.

3.6.3 ProPG2017

Planning guidance (ProPG2017) relates to new residential development and airborne transportation noise, which includes exposure to road traffic, railway and aviation noise. Whilst ProPG, 2017 generally mirrors the requirements of BS8233:2014 and the World Health Organisation Guidelines, 1999, it goes further in setting a limit for inside bedrooms for L_{Amax} events and specifically, no more than 10 L_{Amax} events per night time period above 45dB(A).

The internal bedroom L_{AMax} values will be used in accordance with ProPG2017.

3.6.4 Planning Noise Advice Document Sussex, November 2023

A planning noise advice document which all Sussex local authorities have contributed to and signed up to (including Horsham District Council) remains relevant. The guidance document has been followed in respect of measurement parameters and report presentation of data.

3.6.5 Building Regulations Approved Document O – Overheating

Recently introduced Part O of the building regulation requires an assessment of whether bedroom windows can be opened at night. It is assumed that bedroom windows will be closed if either of the conditions below are met:

- Internal noise level exceeds 40dB $L_{Aeq, 8hour}$
- L_{Amax} events exceed 55dB L_{Amax} more than 10 times a night.

3.7 Methodology and Rationale

A number of class 1 sound level meters were used to determine the soundscape around the site from 10th April 2025 to 15th April 2025. These included Sargent Way, Broadbridge Way and Old Wickhurst Lane. The locations, as seen in Figures 3 & 4 below were specific to capture and quantify road traffic noise as well as commercial sound from the Tesco, drive through car wash.

4 Sound Surveys

The long-term survey measurements were made in Freefield conditions with Fast and A weighted filters applied. The class 1 sound level meters used within the surveys were calibrated at the beginning and end of the survey to ensure that the meters were operating correctly and that the data produced is capable of being relied upon.

The resolution period for measurements was 1minute in accordance with the Sussex Planning guidance for LT1 and LT2. For LT3, the resolution period was 5 minutes to accommodate the fact that the sound level meter had a smaller memory capacity.

All long term sound level meters used dry cell batteries and were placed into a locked weatherproof peli case to prevent tampering and/or theft.

The positioning of the survey equipment can be seen in Figures 3 and 4 below and utilise WhatThreeWords to enable the positions to be further quantified.

Figure 3. Survey Images

Figure 4. Survey Locations

Survey(s) carried out by	Scott Castle BSc(Hons) Env Health, MCIEH CEnvH MIOA
Equipment Used	LT1 Castle Mirus, Class 1 Sound Level Meter, Monopole Mounted LT2 Svantek Mirus 971A Class 1 Sound Level Meter. Monopole Mounted LT3 Norsonic 118 Class 1 Sound Level Meter – Monopole Mounted
Equipment Used	Castle Acoustic Calibrator – Serial No. 041173
Location	LT1- fork.closed.fishery, 2m above ground level LT2-retain.focus.apples – 2m above ground level LT3 – mice.impose.glass
Duration	10th April 2025 to 15th April 2025

Table 2. Survey Details (Sound)

5 Results of the Sound Surveys

All sound survey data is reported as freefield values and uses Fast and A weighted filters.

In Figures 5, 6 and 7 below, these display the daytime and night time measured sound pressure levels. The 11th highest L_{Amax} events are also presented for 1minute, to allow a consideration for ProPG2017 and the overnight LAmax events inside a bedroom space. The L_{AMax} events are also reported in 2-minute periods for assessing overheating.

The Figures then go on to show the relevant sound reduction index (SRI) at each of the survey positions.

5.1 LT1 – Sargent Way

LT1-Sargent Way									
		$L_{Aeq\ 16/8Hr}$		11th L_{Amax}		Sound Reduction Index Required			
Day	Date	Day	Night	1 min	2min	Day 16Hr	Night 8 Hr	$L_{Amax,1min}$	$L_{Amax,2min}$
Thu	10/04	N/A	48.0	66.9	66.4	N/A	18	22	21
Fri	11/04	54.2	48.5	65.7	65.7	19	19	21	21
Sat	12/04	54.1	43.1	63	62.8	19	13	18	18
Sun	13/04	53.3	48.5	65	65	18	19	20	20
Mon	14/04	54.3	46.1	66	66	19	16	21	21
AVERAGE:		**54**	**47**	**65**	**65**	**19**	**17**	**20**	**20**

Figure 5. LT1 Survey Data

The worst case measured daytime and night time sound pressure levels suitable to calibrate a noise with will be 54dB $L_{Aeq,\ 16\ hour}$ and 49dB $L_{Aeq,\ 8\ hours}$.

5.2 LT2 – Broadbridge Way

LT2 Broadbridge Way									
Day	Date	$L_{Aeq\ 16/8Hr}$		11^{th} L_{Amax}		Sound Reduction Index Required			
		Day	Night	1 min	2min	Day 16Hr	Night 8 Hr	$L_{Amax,1min}$	$L_{Amax,2min}$
Thu	10/04	N/A	54.0	74	73.9	N/A	24	29	29
Fri	11/04	61.8	53.1	73.7	73.7	27	23	29	29
Sat	12/04	61.2	51.3	71.9	71.9	26	21	27	27
Sun	13/04	60.2	53.9	73.2	73.2	25	24	28	28
Mon	14/04	61.6	53.0	72.5	72.4	27	23	28	27
AVERAGE:		**61**	**53**	**73**	**73**	**26**	**23**	**28**	**28**

Figure 6. LT2 Survey Data

The worst case measured daytime and night time sound pressure levels suitable to calibrate a noise with will be 62dB $L_{Aeq,\ 16\ hour}$ and 54dB $L_{Aeq,\ 8\ hours}$.

5.3 LT3 – Old Wickhurst Lane

LT3- Old Wickhurst Lane Logarithmically Averaged Day and Night time Periods (External - Freefield)-dB(A)			
$L_{Aeq,\ 16\ hour-\ 07:00-23:00}$		$L_{Aeq,\ 8\ hour\ 23:00-07:00}$	
Day 1	55.0	Night 1	48.7
Day 2	54.5	Night 2	49.7
Day 3	53.9	Night 3	49.7
Day 4	55.1	Night 4	49.6
Arithmetic Average	**54.6**	Night 5	47.7
		Arithmetic Average	**49.4**

Figure 7. LT3 Survey Data

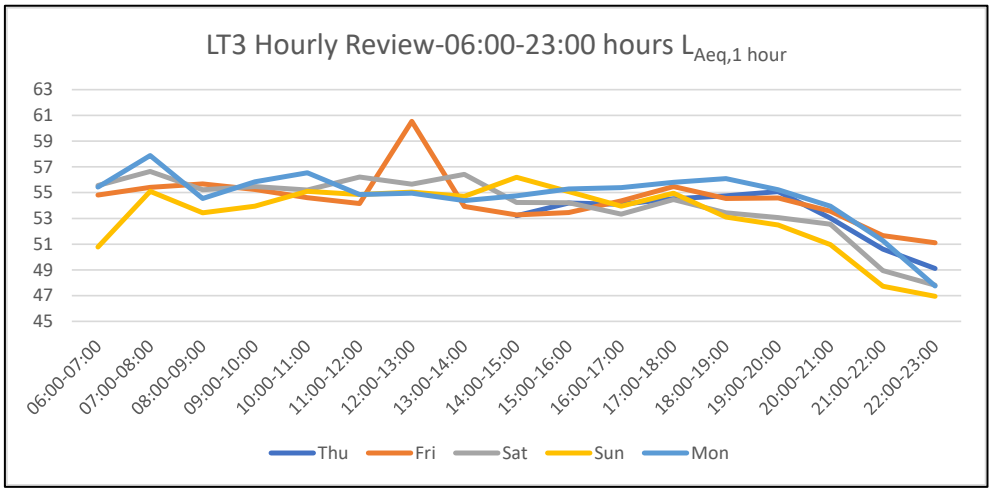

Figure 8. LT3- Hourly Review

5.4 Results Summary

Summary of Worst Case Measured Data by Location		
Survey Location	**Daytime (07:00-23:00 hours)**	**Night Time (23:00-07:00 hours)**
LT1	54	49
LT2	62	54
LT3	55	50
All data is dB, $L_{Aeq,T}$ and Freefield		

Figure 9. Summary of Measured Data

The noisier road element is therefore Broadbridge Way, located to the North.

6 Noise Modelling Software (IMMI)

In order to see how noise varies at different positions around the proposed development it is possible to produce a noise contour map. A computer noise model has been completed using the computer package IMMI. Drawings of the area have been used to complete the noise models and the topography of the location recreated. IMMI faithfully implements the propagation method of ISO-9613:1996; Acoustics – Attenuation of sound during propagation outdoors.

The noise modelling software predicts freefield and A weighted dB values.

6.1 Noise Model Inputs

The site contains both flats as well as dwelling houses. Flats have been modelled as 12.2m above ground level and houses as 8.9m above ground level. These are apex roof heights. Flats over garages (FOGs) have been modelled as 7.8m above ground level.

The roadside surveys have been assessed and calibrated using a worst-case day and worst case night time sound pressure level. The road is calibrated by placing a line source into the centre of the road and then, knowing the exact position of the survey location, adjusting the sound power level of the road until such time that the relevant sound pressure levels are achieved at the survey locations. This is relevant for both LT1 and LT2.

For the calibration at LT3, this will be based on a worst-case hour due to the commercially generated sound source from the Tesco car wash.

Adjacent buildings were mapped in terms of heights using elevations from approved planning applications on the Horsham planning website.

Privacy fences were added as 1.8m above ground level.

Where fences were adjacent to the public highway, these have been modelled as 2m above ground level. It is assumed that these will have suitable massing (12-15kg/m^2) to prevent the passage of sound through the fence/barrier.

Site landscaping boundaries have been left open for Old Wickhurst Lane and Broadbridge Way.

The Tesco car wash has only been modelled for the daytime period.

2D modelling plans have been produced to identify the following

- Daytime Soundscape
- Night Time Soundscape
- Gardens/External Amenity Areas – Colour key, green below 50dB $L_{Aeq,16\ hour}$, yellow 50-55dB $L_{Aeq,\ 16\ hour}$ and red for areas which exceed 55dB $L_{Aeq,16\ hour}$.
- Simplified Overheating Assessment – Green for night time soundscape below 50dB $L_{Aeq,8\ hours}$ or red for 50dB $L_{Aeq,\ 8\ hour}$ and above.
- Mitigation Measures required. Below 56dB $L_{Aeq,16\ hour}$ as green, red for areas exceeding 56dB $L_{Aeq,\ 16\ hours}$. These assume from the Acoustics, Ventilation and Overheating Guidance dated 2020 that standard thermal double glazing and trickle vents are capable of achieving an SRI of 21dB from outside to inside sound pressure levels.

6.2 Noise Model Outputs

6.2.1 Daytime

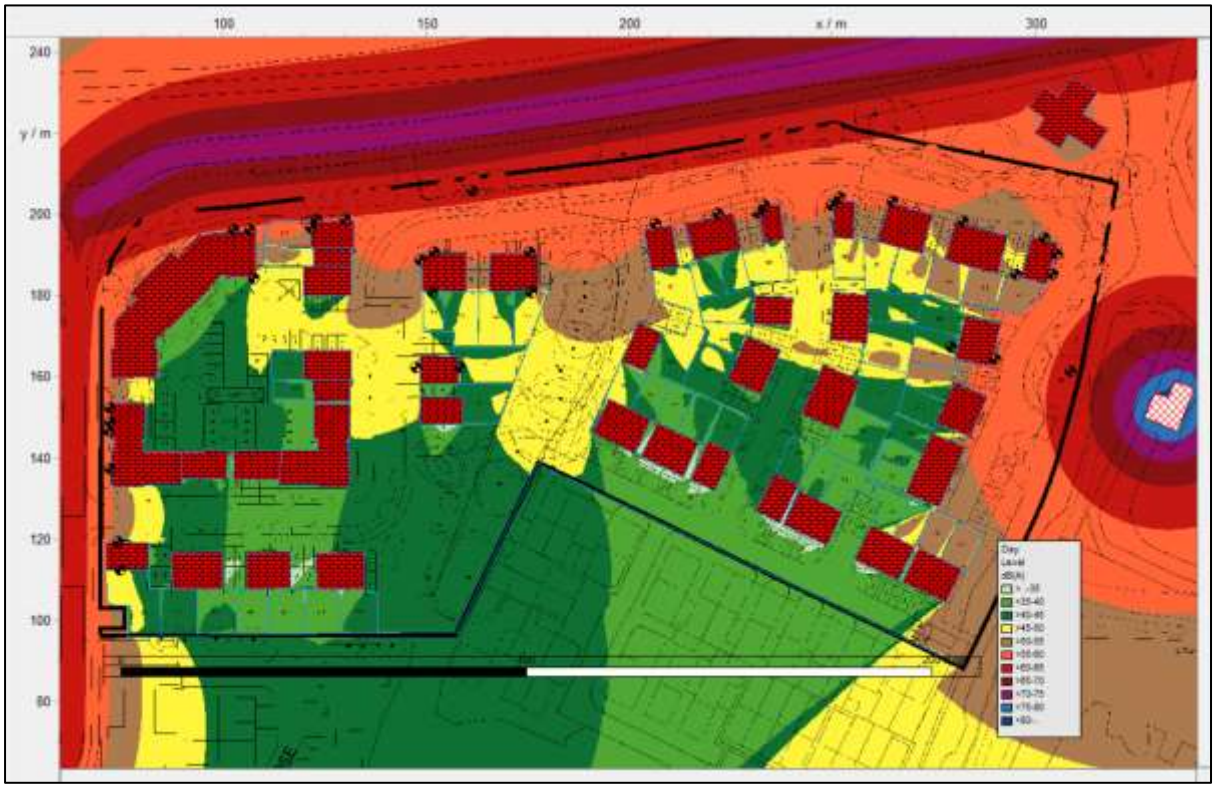

Figure 10. 2D Noise Contours - Daytime Noise – $L_{Aeq,\ 16\ hour}$

6.2.2 Night Time

Figure 11. 2D Noise Contours, $L_{Aeq,\ 8\ hour}$

6.2.3 External Amenity Areas (2D)

Figure 12 below predicts all garden areas as being below 55dB $L_{Aeq,16\ hour}$.

Figure 12. 2D Noise Contours. Gardens/External Amenity Areas

6.2.4 Areas Suitable for a Simplified Overheating Assessment

The 2D predictions indicate that the majority of the site is likely to be assessed using a simplified assessment, albeit flats overlooking Sargent Way may require a more detailed analysis.

Figure 13. 2D Noise Contours. Areas where Approved Document O - Simplified Assessment May be Carried Out

6.2.5 Likely Mitigation Measures Required (Daytime)

The 2D predictions indicate that mitigation measure above standard thermal double glazing and trickle vents may be required for properties overlooking Sargent Way, Broadbridge Way, and elements of Old Wickhurst Lane. This is further detailed in Section 8.1.

Figure 14. 2D Noise Contours - Potential Daytime Mitigation Measures

6.2.6 Likely Mitigation Measures Required (Night Time)

Figure 15. 2D Noise Contours. Potential Night-time Mitigation Measures

7 Discussion

7.1 Calculation of the Sound Reduction Index

By being aware of how the soundscape impacts the proposed properties, a noise modelling approach predicts external sound pressure levels around the building perimeters. Subsequently, the required Sound Reduction Index (SRI) to achieve satisfactory internal sound pressure levels can be calculated.

There are three drivers which impact the façade sound reduction index or SRI. These are the daytime continuous noise levels measured over 16 hours in $L_{Aeq'T,}$ the night time continuous noise levels over 8 hours, also measured in $L_{Aeq'T.}$ Thirdly, ProPG2017 requires a consideration of the number of L_{Amax} events which will occur in a bedroom during the night time period. Specifically, ProPG2017 requires no more than ten events exceeding 45dB L_{Amax} measured internally. Whichever of these drivers is highest is applied to ensure that the residents are protected from each criterion.

It is relevant to note that living room and bedroom calculations differ, as whilst living rooms are subject to only the daytime predicted sound pressure levels, bedrooms must consider both daytime and night time continuous sound pressure levels as well as L_{Amax} events during the night to protect sleep.

The daytime SRI is the predicted external freefield sound pressure level minus 35dB as per the Table 4 values in BS8233:2014 and the same for the night time values (albeit minus 30dB).

The L_{Amax} SRI is achieved by using the predicted night time external sound pressure level and comparing this with the measured night time survey noise level. The SRI figure is then adjusted to prevent no more than 10 L_{Amax} events per night inside the bedroom environment above 45dB L_{Amax}. The adjustment process takes account of each of the 5 measured night time periods to ensure that no individual night exceeds 10 events of 45dB L_{Amax} inside the bedroom.

The long-term survey positions have been used to assess night time data and L_{Amax} considerations. The SRI calculations have considered the worst-case plots closest to the roads and the Tesco car wash as well as the newly introduced plots (Plots 52-55). These considered Plot 43, Flat C(Plot 34), Plot 19, Plot 83 and Plot 85.

The results are split into bedrooms which consider daytime, night time and L_{Amax} events overnight as well as kitchen living diners (KLD) which are only required to consider the daytime sound pressure levels.

7.1.1 Sound Reduction Index – Kitchen/Living /Diners

Sound Reduction Index - Kitchen/Living/Diners		
Location	**Predicted Daytime External SPL**	**SRI- Day**
Plot 43 Kitchen south	46.7	12
Flat C-KLD West-Grd	55.7	21
Plot 19 Grd-Kitchen	59.8	25
Plot 19 Living-GRD	60.0	25
Plot 83-Living	56.2	21
Plot 83-Kitchen-dine	56.7	22
Plot 85 Living	56.3	21
Plot 85 rear-Kitchen	42.3	7
FlatBlockA-Kitchen	59.7	25

Figure 16. Sound Reduction Index - Kitchen/Living/Diners

7.1.2 Sound Reduction Index – Bedrooms

Location	Predicted Daytime External SPL	Predicted Night Time External SPL	Sound Reduction Index (SRI)			
			Day SRI	Night SRI	$L_{Amax\ SRI}$	SRI to be Applied
Bedrooms						
Plot 43 bed North	52.0	47.0	17.0	17.0	22	22
Plot 43 bed South	51.8	46.8	16.8	16.8	22	22
Flat C Bed West Grd	55.6	50.5	20.6	20.5	26	26
Flat C bed (2) Grd	55.7	50.5	20.7	20.5	26	26
Plot 19 Bed 2	62.1	54.1	27.1	24.1	30	30
Plot 19 Bed 1	62.3	54.3	27.3	24.3	30	30
Plot 19 bed 1(2)	59.7	51.7	24.7	21.7	28	28.0
Plot 85-Bed 1	57.6	41.1	22.6	11.1	12	22.0
Plot 85 bed 1(2)	54.2	45.7	19.2	15.7	16	19.0
Plot 85-Bed 2	58.2	40.3	23.2	10.3	11	23.0
Plot 85 bed 3	56.6	38.9	21.6	8.9	10	22.0
Plot 85 Bed 2 front	57.8	37.4	22.8	7.4	8	23.0
Plot 85 rear-Bed 1	45.8	36.4	10.8	6.4	7	11.0
Flat Block A Bed 1	59.9	51.9	24.9	21.9	28	28.0
Flat A _Bed 2	41.5	33.5	6.5	3.5	10	10.0
Flat Block A Bed 1 F	62.3	54.3	27.3	24.3	30	30.0
Plot 80	58.4	50.3	23.4	20.3	26	26.0
Plot 80 Bed 2	57.0	49.0	22.0	19.0	25	25.0
Plot 60	58.8	50.8	23.8	20.8	27	27.0
Plot 60 Bed 2	56.2	48.2	21.2	18.2	24	24.0
Plot 59	58.7	50.7	23.7	20.7	27	27.0
Plot 57	58.7	50.7	23.7	20.7	27	27.0
PLot 81	57.5	49.5	22.5	19.5	26	26.0
Plot 83	55.4	47.3	20.4	17.3	23	23.0
Plot 52 North - GF	57.0	49.0	22.0	19.0	25	25
Plot 52 North - FF	58.9	50.9	23.9	20.9	27	27
Plot 52-Bed 2	56.7	48.7	21.7	18.7	25	25.0
Plot 52 South GF	40.2	31.8	5.2	1.8	8	8
Plot 52 South FF	41.7	32.9	6.7	2.9	9	9
plot 55 North GF	56.6	48.6	21.6	18.6	25	25
plot 55 North FF	58.2	50.2	23.2	20.2	26	26
Plot 55 South GF	44.0	33.9	9.0	3.9	10	10
Plot 55 South FF	45.9	34.9	10.9	4.9	11	11
Plot 51 West GF	47.1	39.1	12.1	9.1	15	15
Plot 51 West FF	48.2	40.2	13.2	10.2	16	16
Plot 51 East GF	44.1	35.9	9.1	5.9	12	12
Plot 51 East FF	47.4	39.3	12.4	9.3	15	15

Figure 17. Sound Reduction Index - Bedrooms

The worst-case SRI to be achieved is 30dB and is driven by the L_{Amax} events overnight for Plot 19 and Flat Block A, which is the closest plot to Broadbridge Way. The result remains consistent with Broadbridge Way having the higher measured daytime and night time $L_{Aeq,T}$ data.

For context, the Acoustics, Ventilation and Overheating Guidance dated Jan 2020 describes the relationship between the level difference between inside and outside sound pressure levels and how this might be achieved with different ventilation types, with types 1 and 2 being trickle vents, type 3 being mechanical extract ventilation (MEV) and type 4 being Mechanical Ventilation and Heat Recovery. This is detailed in Figure 18 below.

Table B-2 Potential level differences associated with different ventilation Systems from ADF

Ventilation System from ADF	Cont. equiv. (L_{eq}) or events (L_{Amax})	Level Difference, external free field level – internal reverberant level, dB	
		Typical windows and vent	Higher acoustic performance windows and vent
1, 2	L_{eq}	21	31
	L_{Amax}	22	35
3 (with trickle vent)	L_{eq}	23	33
	L_{Amax}	24	38
4 (no trickle vent)	L_{eq}	27	38
	L_{Amax}	31	45

Figure 18. Table B2 of Acoustics Ventilation and Overheating Guidance (AVOG), Jan 2020

7.2 Consideration of External Amenity Areas

As seen from the daytime model output, all garden areas are comfortably below the requirement in BS8233:2014 of 55dB $L_{Aeq,\ 16\ hour}$. It should be remembered that the noise model was calibrated to the worst case measured daytime and night time periods.

7.3 Overheating Assessment (Simplified)

Recently introduced Part O of the Building Regulations requires an assessment of whether bedroom windows can be opened at night. It is assumed that bedroom windows will be closed if either of the conditions below are met:

- Internal noise level exceeds 40dB $L_{Aeq,\ 8hour}$
- L_{Amax} events exceed 55dB L_{Amax} more than 10 times a night.

Further to the November 2024 Association of Noise Consultants (ANC) overheating guidance, a simplified assessment for the purpose of Building Regulations, Approved Document O may be carried out whereby the night time conditions are below 50dB $L_{Aeq,\ 8\ hour}$. From Figure 13 above, it is noted that not all of the site is below 50dB $L_{Aeq,8\ hour}$ and some areas facing the roads may be above the value for a simplified assessment.

The simplified assessment process subtracts 10dB from the freefield conditions to determine whether **both** continuous conditions and the L_{Amax} events are achieved internally inside the bedroom space.

As stated, a simplified assessment may only be carried out where the night time soundscape is below 50dB $L_{Aeq,\ 8\ hour}$. A review of first floor windows has been carried out where the 50dB $L_{Aeq,8\ hour}$ criterion has been achieved and is presented below in Figure 19. A simplified assessment is not carried out for ground floor bedrooms due to safety/security grounds.

Simplified Assessment of Openable Bedroom Bedrooms					
Location	**Predicted Night Time External SPL**	**Open Window (-10dB)**	**Below 40dB $L_{Aeq,8\ hour}$**	**L_{AMax} Events Below 55dB**	**Openable Window (Yes/No)**
Plot 43 bed North	47.0	37.0	Yes	No	No
Plot 43 bed South	46.8	36.8	Yes	No	No
Plot 83-Bed 1	41.1	31.1	Yes	Yes	Yes
Plot 83 bed 1(2)	45.7	35.7	Yes	No	No
Plot 83-Bed 2	40.3	30.3	Yes	Yes	Yes
Plot 83 bed 3	38.9	28.9	Yes	Yes	Yes
Plot 85 Bed 2 front	37.4	27.4	Yes	Yes	Yes
Plot 85 rear-Bed 1	36.4	26.4	Yes	Yes	Yes
Flat A _Bed 2	33.5	23.5	Yes	Yes	Yes
Plot 81	47.3	37.3	Yes	No	No
Plot 52 South FF	32.9	22.9	Yes	Yes	Yes
Plot 55 South FF	34.9	24.9	Yes	Yes	Yes
Plot 51 West FF	40.2	30.2	Yes	Yes	Yes
Plot 51 East FF	39.3	29.3	Yes	Yes	Yes

Figure 19. Assessment of Overheating (Building Regulations) for the Night Time Period - Bedrooms

Figure 19 above indicates that some of the windows are capable of being opened during the night time period to mitigate thermal overheating. Units with bedrooms overlooking or in close proximity to both Sargent Way and Broadbridge Way are not likely to be able to open windows to mitigate thermal overheating during the night time period.

However, where the soundscape is above 50dB $L_{Aeq,8\ hour}$, it is possible to predict an openable area for the windows. This has been predicted in Figure 20 below. It is possible to carry out a prediction of openable areas of the windows using the guidance from the Association of Noise Consultants dated November 2024 for overheating. These demonstrate the following and could be considered by the client in association with other methods to control overheating in bedrooms.

Overheating assessments are not carried out for ground floor windows as these are not openable during the night time period on safety/security grounds

This report is not a formal/dynamic overheating risk assessment; however, the results should be shared with your ventilation/building assessors/M+E consultants.

Openable Area Calculations- Bedroom Windows Overnight				
Plot Number	**Predicted External Night Time**	**Room Volume**	**SRI to achieve 40dB $L_{Aeq,8\ hour}$**	**Openable Equivalent Area (m^2)**
19 Bed 2	54.1	26.9	14.1	0.165
19 Bed 1	54.3	27.6	14.3	0.162
Flat Block A Bed 1 F	54.3	34.3	14.3	0.200
52	48.7	18.7	8.7	0.399
55	50.2	18.5	10.2	0.279
57	50.7	18.2	10.7	0.245
59	50.7	18.5	10.7	0.279
60	48.2	18.7	8.2	0.399
80	49.0	18.7	9.0	0.399
81	49.5	33.4	9.5	0.593
83	47.3	24.5	7.3	0.723
85	45.7	18.2	5.7	0.776

Figure 20. Maximum Openable Window Area-m^2

It should be recognised that a standard through frame small slot trickle vent is approximately 2500mm^2. This equates to 0.0025m^2. Therefore, an openable window in Figure 20 above of any less than this would not be practical.

Figure 20 above shows in the final column the maximum permissible equivalent openable area for the bedroom windows of Plot 19 to achieve compliance with the internal $L_{Aeq,8hr}$ noise criteria. As can be seen, this is achieved. However, as shown previously in Figure 17, the requirements for Plot 19 are driven not by the internal $L_{Aeq,8hr}$ criterion but by the L_{Amax} criterion. Section 7.5 below sets out the results of rigorous calculations and the specific requirements for Plot 19. The data should be shared with your M+E/overheating consultant.

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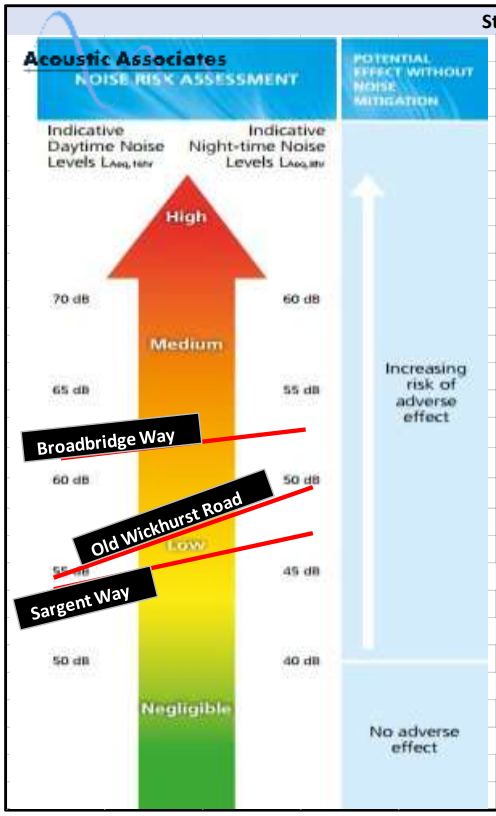
7.4 ProPG2017 Initial Site Risk Assessment

In line with the requirements of ProPG2017, an initial site risk assessment has been undertaken which requires that the worst case/typical 24 hours are represented. It is noted that the noise modelling has included the worst case measured events from all three monitoring positions.



Stage 1. Initial Site Risk Assessment	
Site:	Broadbridge Heath Horsham
Date:	16-Apr-25
Individual	Scott Castle
Proposal	Proposed Residential
Survey or Prediction	Survey
Freefield Survey	Yes
Instrumentation used	Castle Mirus, Svantek971 and Norsonic 118
Typical/Worst case 24 hour period	
Location Assessed(Grid Ref)	0
Subjective Noise sources at site	Road traffic noise
Weather conditions	predominantly dry and low wind speeds
Result	
No Mitigation Measures	
Daytime ($L_{Aeq,\ 16\ hour}$)	54/61/55 dB $L_{Aeq,16\ hour}$ (LT1/LT2/LT3)
Night ($L_{Aeq,\ 8\ hour}$)	47/53/50 dB $L_{Aeq,\ 8\ hour}$ (LT1/LT2/LT3)
Night L_{AMax} Events above 45dB(A)	>200 events assuming Rw13 at Survey Location
Outcome	
Level of Risk Posed	Low to Medium
Next Steps	
Stage 2 Full Assessment	No
Signed Off by	Scott Castle
Date	16-Apr-25

Figure 21. ProPG 2017 Initial Site Risk Assessment

The assessment details a low to medium impact and the grant of planning consent should not be withheld on noise grounds.

7.5 Rigorous Calculation

Rigorous calculations, as per Annex G2 of BS8233:2014 consider the worst-case measured external (freefield levels) sound pressure level, but rather than using a simplistic external to internal sound pressure level subtraction, the Sound Reduction Index (SRI) is achieved using ratios of window sizes, facades, glazing specification as well as the proposed ventilation considerations.

The plots closest to the roadside and the Tesco car wash have been reviewed to determine the possible glazing and ventilation combination.

The rigorous calculations have taken account of the following:

- The worst case highest daytime sound pressure levels have been used.
- All rigorous calculations use freefield data.
- The calculations have assumed a masonry cavity wall and for the roof, tiles on felt, a pitched roof, 100mm of mineral wool on top of a plasterboard ceiling.
- Where there is glazing on more than one elevation, the glazing has been summed and considered against the noisiest elevation
- 35dB $L_{Aeq,16\ hour}$ has been applied as the daytime criteria for a bedroom setting
- A window frame slot vent was used within the assessment with a typical 31dB reduction.

Outomes of the Rigorous Calculations							
Plot	**Rooms**	**External SPL**	**SRI Required**	**Window**	**Vent**	**Internal SPL**	**SRI Achieved**
43	Kitchen (North)	53	18	4\12\4	31dB	25	28
43	Kitchen(South)	49	14	4\12\4	31dB	21	28
43	Bed North	53	23	4\12\4	31dB	26	28
43	Bed South	53	23	4\12\4	31dB	25	28
34	Bed	56	26	4\12\4	Greenwood EA	28	28
34	KLD	56	21	4\12\4	31dB	29	27
19	Bed 2	62	30	10\12\4	Ryton AAC125	30	32
19	Bed 1	62	30	10\12\4	Ryton AAC125	31	31
19	Living Room	60	25	4\12\4	31dB	33	27
19	Kitchen	60	25	4\12\4	31dB	34	26
85	Living Room	56	21	4\12\4	31dB	28	28
85	Kitchen	42	7	4\12\4	31dB	16	26
85	Bedroom 1 (Rear)	46	11	4\12\4	31dB	19	28
85	Bedroom 2 (Front)	58	23	4\12\4	31dB	31	27
55	Bedroom 1 (Rear)	57	26	4\12\4	Greenwood 5000EA	28	29
55	Living Room (Front)	57	22	4\12\4	2x Greenwood 5000EA	30	27

Figure 22. Rigorous Calculation Outcomes

8 Recommendations

8.1 Glazing

The assessment of the worst-case plots closest to the roads indicates that only Plot 19 will require enhanced glazing for the bedroom spaces located at first floor.

Whilst Pilkington glazing has been used within the assessment, should the end developer of the site choose to pursue different glazing providers, then it is relevant to be able to compare the $R_{traffic}$ or R_w+C_{tr} metric. The $R_{traffic}$ is the only comparable value between glazing providers and includes a low frequency correction.

Sound Insulation Performace of Window Units			
Brand	**Window Specification**	**R_w**	**$R_{traffic}$**
Pilkington Double	4\12\4	31	25
Pilkington Double	10\12\4	36	29

Figure 23. $R_{traffic}$ Values for Glazing

N.B. This is the required R_w+C_{tr} of the frame and glazing together. If the glazing supplier has test results for the glass on its own an R_w+C_{tr} value 2-3dB higher would be required (glazing tested on its own will outperform glazing that is tested within a window frame). Please note R_w+C_{tr} is also referred to as $R_{traffic}$.

8.2 Ventilation

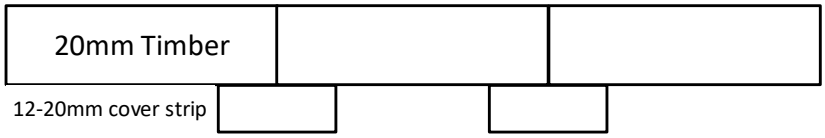
The majority of the rigorous calculations used a standard 31dB slot trickle vent for the purposes which is a through frame vent operated by the future occupants of the site/spaces. The exception to this is where a Greenwood 5000EA vent was used, also as a through frame slot vent with a free space of 5230mm^2 and a $D_{new}+C_{tr}$ rating of 33dB. It is critical when comparing vents, that only the OPEN data of the vents is compared.

A through wall vent was used for Plot 19 closest to Broadbridge Way. Whilst this was a Rytons AAC125LookRyt vent, should alternative models be considered, these should have a Dnew+Ctr of no less than 41dB(A). This is used for bedroom spaces and has an openable area of 8500mm^2 and is considered to be an attenuated acoustic vent.

8.3 Roadside Barriers/Fence-Lines

Any garden barriers to the North or Western elevations of the application site which overlook Broadbridge Way or Sargent Way should have suitable mass to ensure that road traffic noise does not pass through the barriers. These should have a density of 12-15kg/m^2.

The noise fence should be constructed from butt jointed timbers (minimum of 20mm thick). 12-20mm cover strips should also be fitted over the whole of the butt joint as shown below:



9 Conclusion

Three class 1 sound level meters were used to characterise the site soundscape between 10-15th April 2025. These were located at Sargent Way to the West of the application site, Broadbridge Way to the North of the site and Old Wickhurst Lane to the East of the site. The location of the survey was designed to consider the relevant road traffic sound sources, as well as the Tesco car wash, as all of these had been previously flagged for attention by Horsham District Council in their pre-application advice with the client.

Distant road traffic noise is heard from the A24 to the East of the site. The survey data identified that Broadbridge Way is the noisiest sound source to the North of the site. Subjectively, Tesco drive through car wash could also be detected at the far Eastern boundary of the site.

Contextually, housing already exists to the West, South and North of the application site.

The worst-case Sound Reduction Index (SRI) is for Plot 19 and is driven by L_{Amax} events for the overnight period. Plot 19 is located approximately 13m immediately South of Broadbridge Way.

Rigorous calculations of the worst-case plots identified that only Plot 19 required enhanced glazing for the bedroom spaces. The remainder of the site is capable of being constructed using standard thermal double glazing ($R_{traffic}$ 25dB(A))

All garden spaces/external amenity areas have been assessed and are all below 55dB $L_{Aeq,\ 16\ hour}$ achieving the requirements of BS8233:2014 and the World Health Organisation Guidelines for Community Noise dated 1999, revised 2018.

A ProPG2017 initial site risk assessment to inform stakeholders and decision makers alike indicates that the site is a low to medium risk in respect of mitigation measures required to protect future occupants.

Planning permission should not be withheld on noise grounds.